THE MINERAL INDUSTRIES OF DENMARK, THE FAROE ISLANDS, AND GREENLAND

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DENMARK

Denmark's industrialized market economy improved slightly with a gross domestic product (GDP) growth of 2.3% in 2004 compared with that of 0.4% in 2003. The per capita GDP based on purchasing power parity increased to $33,089; this was among the highest standards of living in the world. Inflation was in check at a low rate of 1.2%. Denmark produced fossil fuels from the oilfields and gasfields in the North Sea. The country also produced such nonfuel minerals as chalk, clays, diatomite, limestone, and sand and gravel. Denmark was a net exporter of food and energy (International Monetary Fund, 2005§[1]).

DanSteel A/S sold its shut-down bar mill to Danscan Metal A/S. The sale included the 275,000-metric-ton-per-year bar mill at Frederiksvaerk in an area with harbor access and operating equipment, machinery, and spare parts. DanSteel also was trying to sell its dormant steelmaking facilities as part of its strategy to become solely a plate producer with rolling slabs supplied by Novolipetsk Iron and Steel of Russia (Metal Bulletin Daily, 2004).

According to the Danish Energy Authority's assessment, the country's oil reserves as of January 1, 2004, were estimated to be 1,742 billion barrels, which was a decline of 4% from those of January 1, 2003. The average recovery rate for oilfields was 22% of oil in place. Natural gas reserves were estimated to be 136 billion cubic meters in 2004, which was an increase of 5% from 2003 (Petroleum Economist, 2004c).

DONG A/S and ConocoPhillips Co. entered into a deal in which DONG took over ConocoPhillips' shares in the United Kingdom licenses P.911 (20%), P.912 (5.66%), and P.967 (22.5%) and the Faroese license F003 (30%). ConocoPhillips took over part of DONG's share in the Norwegian license PL273 (DONG's share remained 10%). The swap gave DONG 20% of the Laggan discovery northwest of the Shetland Islands. DONG planned to participate in three exploration and appraisal wells in the area in 2004 (RigZone.com, 2004a§).

DONG Transmission and Nord Pool ASA planned to set up a gas trading hub. Denmark's gas market became fully deregulated on January 1 with all customers free to choose their supplier. DONG Transmission was wholly owned by DONG and was split off in 2004. To divest DONG, the Government planned to sell 49% of its public oil and natural gas interest (Dansk Olie og Naturgas) and entered a contract with a British investment bank that would act as a financial adviser (Petroleum Economist, 2004a).

DONG Naturgas A/S became a gas supplier to the Netherlands on October 1 under a 500-million-cubic-meter-per-year contract agreement with Essent. The gas would be delivered through a new 100-kilometer (km)-long 26-inch-diameter subsea pipeline connection between the Tyra Field in the Danish North Sea and the Nogat pipeline system in the Dutch North Sea (Petroleum Economist, 2004b). Shell Olie og Gasudvinding Danmark BV also exported natural gas directly from Denmark to the Netherlands through the new $200 million pipeline. The pipeline ran from the Tyra West platform to the F3-FB platform, and gas was fed into the Nogat pipeline system to Den Helder on the Dutch coast. The pipeline was owned by DONG Naturgas (50%), Shell Olie (23%), AP Moller-Maersk A/S (19.5%), and ChevronTexaco Denmark Inc. (7.5%) (RigZone.com, 2004b§).

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[1]References that include a section mark (§) are found in the Internet References Cited section.

Major Source of Information

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FAROE ISLANDS

The Faroe Islands are a self-governing community within the Kingdom of Denmark. Cod fishing and off-shore oil and gas exploratory drillings were the islands' major activities. Exploration activities indicated that there could be undiscovered oil and gas resources. The home-rule Government has full authority over hydrocarbon exploration in its territory and attempted to move toward greater independence from Denmark by increasing exports of fish products. The islands have no significant identified mineral resources.

GREENLAND

Greenland is a self-governing administrative division of Denmark. The autonomous region has undeveloped mineral and petroleum resources; exploration activities for both were picking up in 2004. Some Canadian mining companies were active in exploring for diamond and gold, and as a result, a gold deposit was being developed and mined in South Greenland.

Skaergaard Minerals Corp., which is 100% owned by Galahad Gold plc of the United Kingdom, planned to develop the gold-palladium-platinum deposit at Skaergaard in eastern Greenland. The inferred mineral resource contained 1.09 million kilograms of palladium, 339,000 kilograms (kg) of gold, and 93,300 kg of platinum with substantial accessory metals, such as titanium and vanadium (Galahad Gold plc, 2004).

Crew Gold Corp. of Canada's 82.5% owned subsidiary Nalunaq Gold Mine A/S in South Greenland received its first payment of one-half of the estimated gold content from the initial shipment of gold ore. Subsequent payment would take place following treatment of the complete shipment. Rio Narcea Gold Mines SA of Spain processed 31,000 metric tons (t) of gold ore at its El Valle gold-processing plant (Yahoo Finance, 2004§).

Processing of the second shipment of 40,300 t of wet gold ore resulted in a production of 731 kg of gold. The ore had a gold grade of 20.5 grams per metric ton (g/t), and the crushed ore from the original stockpile had 15.1 g/t. The materials were from development and regular mining (Crew Gold Corp., 2004).

Diamond Fields International, Ltd. conducted fieldwork on its nickel project located on Ammassalik Island off the southeastern coast of Greenland. The strike length of the most prospective horizon extended to more than 40 km in four structurally repeated slices. Similarity to the Raglan and the Thompson nickel mineralization and supracrustal host rock lithology was confirmed. An airborne geophysical survey for 2,000 line kilometers would identify areas of massive sulfide concentration within the generally rusty weathered host horizon. The project was centered on a nickel/copper/platinum-group-metals/gold showing hosted by serpentinized ultramafics. Sampling of the discovery outcrop yielded 1% nickel, 0.3% copper, 0.012 g/t platinum, 0.239 g/t palladium, 0.155 g/t gold, 553 g/t cobalt, and 2.4 g/t silver. The project area was expanded through a joint-venture agreement with Nuna Minerals A/S and encompassed 63,737 hectares (ha) (Diamond Fields International, Ltd., 2004).

Diamond Fields International also acquired a new licensed area at Nassuttooq in West Greenland. The 100% owned Nassuttooq property covered 84,600 ha. Field work in 2004 focused on sampling and mapping with emphasis on areas where geologic interpretation indicated prospectivity for nickel-bearing intrusive rocks (Canada NewsWire, 2004).

The Bureau of Minerals and Petroleum and the Geological Survey of Denmark and Greenland conducted a sampling program in the Maniitsoq-Kangerlussuaq region of southern West Greenland, and the test results in 2004 indicated 128 diamonds from three kimberlitic occurrences. The largest diamond measured 0.74 x 0.63 x 0.54 millimeter (GEUS, 2004§).

Hudson Resources Inc. of Canada held a 100% interest in 558 square kilometers (km^2) of diamond prospects in the Sarfartoq area in West Greenland. The company completed microprobe analyses on kimberlite samples for kimberlite-indicator minerals (KIM). Four specific minerals (pyrope garnet, chromite, clinopyroxene, and ilmenite) were found abundant in each of the samples. On the basis of these and previous till KIM results, the company decided to undertake an airborne geophysical program (2,000 line kilometers), a sampling program, and a drill program (Hudson Resources Inc., 2004). Hudson Resources subsequently recovered 120 diamonds greater than 106 microns in size from a 108-kg kimberlite sample.

Metalex Ventures Ltd. of Canada was granted an exploration license that totaled 751 km^2 in southwestern Greenland. An early report of the 10 untested target areas indicated that five rock samples contained microdiamonds. Metalex planned to begin follow-up field work of high-priority diamond indicator targets (Canada NewsWire, 2004§).

True North Gems Inc. of Canada acquired an option to earn a 100% interest in the Fiskenaesset ruby property, which is located in the Qeqertarsuatsiaat district, 160 km south of Nuuk. Field investigations in 2004 included prospecting to quantify the extent of the surficial and bedrock deposits. The Fiskenaesset anorthosite complex also was shown to contain rich chromitite deposits. Rubies were part of a metamorphic mineral assembly and were relatively abundant and widespread (True North Gems Inc., 2004a).

True North Gems completed the minibulk sampling program and recovered an estimated 3 t of ruby-bearing material from surface outcrop. Rubies were reported from six deposits across the 104-km^2 area and were found adjacent to a network of anorthite-quartz

pegmatites. Gem-quality ruby was present in four paragenetic sets. The largest stones were found in the ruby-pargasite-sapphirine-kornerupine set, whereas the best quality rubies appeared in the ruby-phlogopite set (True North Gems Inc., 2004b).

The Government opened the 2004 licensing round in the Davis Strait off West Greenland with deadlines for licensing applications on October 1 and for issuing permits in early 2005. Four areas were to be offered near Nuuk and Sisimiut in western Greenland. Terms included a 30% corporate tax, a favorable surplus royalty regime, and a 12.5% carry of the national oil company (Nunaoil) in the exploration phase. EnCana of Canada held the only active license in the area with a 3,985-km^2 tract (Alexander's Gas & Oil Connections, 2004§).

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TABLE 1

DENMARK: ESTIMATED PRODUCTION OF MINERAL COMMODITIES[1]

(Metric tons unless otherwise specified)

Commodity		2000	2001	2002	2003	2004
Aluminum metal, secondary		16,000	18,000	18,000	18,000	20,000
Cement, hydraulic		2,009,000 [2]	2,047,000 [2]	2,010,000	2,020,000 [r]	2,030,000
Chalk		400,000	1,859,000 [2]	1,900,000	1,900,000	1,950,000
Clays:						
Fire clay		25	25	25	25	25
Kaolin		2,500	2,500	2,500	2,500	2,500
Other		6,500	6,500	6,000	6,000	6,000
Moler, extracted	thousand cubic meters	234	231	230	232	233
Gas:						
Manufactured	million cubic meters	1,500	1,500	1,500	1,500	1,500
Natural:						
Gross	do.	9,700	8,200	8,100	8,300 [r]	8,300
Marketable	do.	7,100	7,330	7,300	7,300	7,300
Iron and steel, metal, steel:						
Crude	thousand metric tons	803 [2]	746 [2]	392 [2]	-- [2]	-- [2]
Semimanufactures	do.	549 [2]	625 [2]	600	300	300
Lime, hydrated and quicklime		115,000	115,000	114,000	115,000	116,000
Natural gas plant liquids	thousand 42-gallon barrels	46,000	47,000	46,700 [2]	46,000	47,000
Nitrogen, N content of ammonia		1,600	1,600	1,600	1,600	1,600
Peat		247,000	287,000	290,000	295,000	296,000
Petroleum:						
Crude	thousand 42-gallon barrels	87,860 [2]	123,800 [r, 2]	132,900 [r, 2]	133,000 [r, 2]	135,000
Refinery products:						
Liquefied petroleum gas	do.	1,700	1,224 [r, 2]	1,195 [r, 2]	1,232 [r, 2]	1,240
Gasoline	do.	30,000	16,496 [r, 2]	15,205 [r, 2]	15,264 [r, 2]	15,300
Naphtha	do.	13,000 [r]	13,000 [r]	-- [2]	--	--
Jet fuel	do.	2,000	3,981 [r, 2]	3,878 [r, 2]	4,479 [r, 2]	4,500
Kerosene	do.	10 [r]	-- [2]	-- [2]	--	--
Distillate fuel oil	do.	28,200	23,606 [r, 2]	23,886 [r, 2]	25,300 [r, 2]	25,500
Refinery gas	do.	1,700 [r]	2,221 [r, 2]	2,141 [r, 2]	2,331 [r, 2]	2,300
Lubricants	do.	300	-- [2]	-- [2]	--	--
Residual fuel oil	do.	13,000	11,488 [r, 2]	11,540 [r, 2]	11,136 [r, 2]	11,000
Petroleum coke	do.	60	-- [2]	-- [2]	--	--
Total	do.	90,000 [r]	72,000 [r]	57,845 [r, 2]	59,700 [r, 2]	59,800
Phosphates, crude, gross weight		1,300	1,300	1,300	1,400	1,400
Salt, all forms		605,000	600,000	600,000	605,000	610,000
Sand and gravel:						
Onshore	thousand cubic meters	28,066 [2]	26,684 [2]	27,000	27,000	28,000
Offshore	do.	715 [2]	700	700	600	600
Total	do.	28,781 [2]	27,384 [2]	27,700	27,600	28,600
Of which sand, industrial (sales)	do.	479 [2]	488 [2]	490	500	500
Stone:						
Dimension (mostly granite)		27,000	27,000	25,000	26,000	26,000
Limestone:						
Agricultural		700,000	700,000	700,000	700,000	700,000
Industrial		250,000	250,000	250,000	250,000	250,000
Sulfur, byproduct		10,500	10,500	11,000	12,000	12,000

Estimated data are rounded to no more than three significant digits; may not add to totals shown. [r]Revised. -- Zero.

[1]Table includes data available through July 7, 2005. Estimated data are based on sales of domestically produced mineral commodities.

[2]Reported figure.